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ABSTRACT

In 1988, a project was undertaken at Chabot College in California to develop a questionnaire and study methodology for assessing the views of employers regarding the business applications of typewriters and computers. Staff at the college needed this information for curriculum and program planning, as well as for equipment and supply budgeting. The project involved: (1) a review of the literature on the need for research on technological changes in the office, questionnaire development and design, and the involvement of staff in research and curriculum design; (2) the formation of a committee made up of the 23 full-time office and business computer education faculty and an administrator; (3) a committee meeting to determine research objectives and a time frame and process for questionnaire development; (4) the solicitation of questions to be incorporated into the survey instrument from committee members; (5) meetings to review, analyze, and evaluate the proposed questions; (6) the preparation of five drafts of the questionnaire; (7) the pilot testing of the final version among 10 different-sized employers; and (8) the development of recommendations concerning study methodology. An extensive literature review, a 99-item bibliography, a curriculum checklist, and various drafts of the survey instrument are included in the project report. (JMC)

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DEVELOPMENT OF A QUESTIONNAIRE FOR A STUDY OF EMPLOYERS' USAGE
OF TYPEWRITERS AND COMPUTER HARDWARE/SOFTWARE IN A
CALIFORNIA COMMUNITY COLLEGE DISTRICT

CURRICULUM AND PROGRAM PLANNING

by

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degree of Doctor of Education

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ABSTRACT

In the 1970s and 1980's office equipment has changed remarkably. Even so, the administrators and Business faculty in the South [Alameda] County Community College District have had neither a means nor a method for assessing the computer and typewriter usage and applications in its business community employers. The staff at the two Chabot College campuses in Hayward and Livermore, California needed this information for curriculum and program planning, as well as for present and future equipment and supply budget planning. The purpose of this study was to develop a questionnaire for primary research of employers' views of typewriter and computer hardware/software usage.

A questionnaire was developed with faculty and administrator involvement from both campuses. A brainstorming and procedural meeting was held at each campus. The faculty submitted potential questions, which were summarized in a first draft. This and subsequent drafts were shared, discussed, and edited among the faculty with the assistance of the Institutional Research Coordinator, until the fifth draft was finalized and piloted. The pilot survey was sent to several employers with different characteristics. The pilot study resulted in further adjustments in the questionnaire.

It was recommended that the questionnaire would be used for the field research of a random sample of small (under 100 employees), medium (101 - 500 employees), and large (over 501 employees) employers in the district. It was recommended that the data collected would be analyzed to provide essential information for the development of future program planning and curriculum development, as well as for institutional decision making in budgeting for equipment and supplies.

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INTRODUCTION

Chabot College, a California community college with lowered enrollments in office automation instruction, has been challenged by four major forces that directly affect the curricula. These include the following: (1) the rapid technological changes which are advertised and discussed in the computer literature as the state of the art developments; (2) the change in the characteristics of students and their attitudes toward education and job training; (3) the opening and expansion of many state accredited proprietary schools, as well as Regional Occupational Centers, to provide short-term training for job seekers; and (4) the increase and expansion of in-house training offerings by employers. In such a competitive marketplace for students, it is important for Chabot College to focus its limited resources toward instruction of employee skills needed by companies on computer and typewriter equipment within its service area.

The problem was that community colleges have had neither a means nor a method for assessing the computer and typewriter usage and related applications of its business community employers. The staff have been dependent upon a few selected people from the public and private sectors who serve on advisory committees and upon the marketing representatives of computer vendors for local input. The faculty and administrators of Chabot College recognized this problem and determined to rectify this absence of data through a district-wide survey of its employers.

The purpose of this project was to develop a questionnaire for primary research of employers' views of typewriter and computer

hardware/software usage in the South [Alameda] County Community College District. The President's Administrative Council agreed that the writer assume the responsibility for the development of this questionnaire with administrative support from the Assistant Dean at Valley Campus and William Threlfall, Coordinator of Institutional Research, and with the involvement of faculty from the Business Divisions of both campuses.

Based upon a preliminary review of the literature providing reasons for the need to assess the technological changes in the workplace, the study was started with a review of the literature to discover any research studies and instruments which other educational institutions had used to survey employers on computer and typewriter usage. None were found. However, the results of a telephone survey of employers which included questions on usage of microcomputers and software in Silicon Valley were published (Lea, 1988) after the questionnaire development for this study was completed. Questionnaires which indirectly related were used as references for format and approach to respondents. The literature was reviewed further for considerations of questionnaire usage and scientific applications used to help develop a valid and reliable questionnaire. In addition, the literature was reviewed for aspects of staff involvement in needs assessment and curriculum monitoring.

Meetings of the full-time business faculty involved in computer and typewriter education at both campuses and resource administrators were scheduled to determine the curriculum-related objectives addressing the statement of the problem and to set a tentative time frame for developing and validating the questionnaire. The committee members agreed that a working document would be sent to each faculty person for

input. The results were summarized into the first draft for discussion at each campus. After each meeting at each campus, new drafts evolved. After two workshop meetings at each campus, the faculty finally directed the Project Facilitator (1) to finalize the format and layout of the instrument with the Coordinator of Institutional Research, who had attended the meetings, and (2) to send it to the faculty for a last review. When the last draft was ready to pilot, copies went to the involved faculty and administrators for comment. In addition, it was evaluated by four "experts." The final document was then pre-tested in-house and by ten companies of various sizes.

Background and Significance

The South County Community College District was established in 1960 to serve southern Alameda county, first through temporary facilities and later through the two permanent campuses of Chabot College, which are twenty-seven miles apart (Staniford, 1981:12-49). The Hayward Campus is surrounded by the cities of Hayward, San Leandro, Union City, Castro Valley. They are long established, densely populated, mature cities with an historical economic base on manufacturing and related services. The Livermore Campus specifically serves the cities of Livermore, Dublin, and Pleasanton. They are long-term communities with their historical economic base in agriculture, services, and employment at two high-tech organizations: the Lawrence Livermore National Laboratory and Sandia Laboratory. In the past five years thousands of square feet of new office space has been constructed in the Livermore-Pleasanton area to attract many additional high tech companies. The Chambers of Commerce (1987) listings for the communities, directly served by Chabot College,

indicated the employment statistics of private and public employers in the college's district: 4180 employers with 1 to 100 employees; 216 employers with 101 to 500 employees; 43 employers with 501 or more employees.

To support these employment bases and employers, Chabot College offers Associate of Arts degrees and Certificates in Computer Information Processing, Text Processing, Secretary with a Information Processing emphasis, Accounting, and Marketing to students. The new character and diversity of the students who take these courses have been discussed by K. Patricia Cross (1974), Brossman (1973:4-33), Gross (1977), Morgan (1978), Mehallis (1983:28), and Sheldon (1983:30-32).

The faculty monitoring and updating the curriculum at Hayward Campus in the Data Processing, Accounting, and Marketing areas are long-term faculty of the district. Their counterparts at the Valley Campus are new hires during the past 10 years. The Office Skills faculty on both campuses have been hired during the past 15 years. Some of these faculty have come from industry, while others have come from high schools or other community colleges. As a result, there is a wide spectrum of opinion and expertise.

These faculty have been faced with the challenges of the micro-computer revolution. Some of the changes to technology in computer equipment and typewriter equipment involve the following:

- 1) the lower computer prices for more sophisticated microcomputer equipment;
- 2) the new cost comparison of computer clones to new typewriters in relationship to the multi-function capabilities of the microcomputers compared to the single-function of the typewriters;

3) the cost effectiveness competition between dedicated word processor computers and the generic word processing software on microcomputers;

4) the increased availability of application programs in new areas of business support versus individual programming in computer languages;

5) the increased memory and speed capabilities of microcomputers per dollar cost in relationship to mainframe and minicomputers;

6) the maintenance factor of microcomputers part replacement compared to the high monthly maintenance costs of mainframe and minicomputers systems; and

7) the diversity of sophistication in the workplace and in the workforce in coping with these changes.

Chabot College, as other community colleges in California, have been challenged with limited resources. Mayhew (1979:51-53), Knoell (Jedamus, 1981:556-557), and Alfred (1984:3) determine that college constituencies must address priorities related to limited resources. Since the California community colleges are dependent upon revenues based on ADA (Average Daily Attendance), described by Berman (1985), it is important that educators determine what they need to be teaching in relationship to whom they will be teaching when renewing or revising the curriculum. The information obtained from the questionnaire which was developed with input from all of these faculty would provide direction for the automated office curriculum planning, which is interfaced with budget considerations for purchase of equipment and related supplies.

The development of a questionnaire to survey local employers' usage of computer hardware and software, as well as typewriters, in the South County Community College District was appropriate to the seminar in Curriculum and Program Planning because it sought community input for the

curriculum planning process. Lucas (Jedamus, 1981:240) supports surveys of employers: "If done properly, this method provides the most logical framework for making decisions concerning reduction, deletion, expansion, or addition of various curricula in higher education." Gollattscheck (1976:24-43), Gagne and Briggs (1979:23-25), Cook (1981:22-23), and Herrscher, Mizell, and Pautler (1986:23-25) emphasize the importance of needs assessments in curriculum planning and development to determine the educational needs of particular clientele. Anderson (1977) concurs through his article, "The Community Survey: An Effective Tool for Administrative Planning and Decision Making." Herrscher, Mizell, and Pautler (1986:23-25) also claim that curriculum designers must be good futurists who "attempt to anticipate the future and incorporate their conclusions into current curriculum and content." In this study, getting ready to obtain data for diagnosing the viability of existing curriculum in an era and environment of rapid changes in computer technology was the major emphasis.

Review of the Literature

Reasons for a Needs Assessment

The community colleges' curriculum which involved office equipment has been affected dramatically by the rapidly changing computer technology in the 1970s and 1980s. Mayhew (1979:208-209) explains that the changing job market should be examined and considered in curriculum designs. A Fortune article by Gannes (August, 1988:42-60) states that "radical changes are standing the No. 3 U. S. industry on its ear. They will transform the way we work." In "The Microcomputer Revolution and Its Impact on Community Colleges," Dellow and Poole (1984:5-11) relate

that education's problems in coping with the newly created technology, which assumes a kind of exponential rate of change. They believe that

This exponential growth rate creates indecision among administrators and faculty about the purchase of equipment and software. Should we buy today or wait until something better comes along?

Fleit (1987) states that there has been an overselling of computer technology on some campuses due to seven myths about the benefits of that technology. On the other side, a 1986 the article "Double Use of Computers is Still Not Enough" in Phi Delta Kappan reflects a contradictory position. Decisions on equipment and related supplies, including computer software, directly affect curriculum planning, staff development and preparation, implementation, and classroom instruction.

Charp (1986:10), in discussing computer-related educational issues, makes the following comment:

There is growing recognition that the education plan of the country must go hand-in-hand with other plans for economic and social development. . . Definitive research results are still almost non-existent. Too much evaluation is intuitive. Analysis of results and sharing of these results are badly needed.

Harris' (1985:23) survey of 705 vocational-technical facilities in six midwestern states indicated that more information from the business community was needed. College Planning: Strategies for Assessing the Environment (Chancellor's Office, 1983:3, 24) recommends that external factors should be examined to see what the college ought to do. The Committee for Economic Development (1968:30) and Lewis (1986:73-87) believe that school districts need to become research and development oriented. Boggs and Zener (1983:64-67) point out that business educators need to do research related to the technological changes in the office in order to better focus their curriculum and instruction. Jorgensen and Campbell (1985:25, 26) in an article "Business Classroom and Laboratory

Equipment" indicate that "research will help with the identification of core competencies and additional skills that will equip the worker to learn and to adapt to changes in the workplace." Lea (1988) promotes local surveys: "The more companies we survey, the more likely we are to give our students the training they need to compete in today's business world."

Geber (1987) refers to the 1986 National Alliance of Business Report on Employment Policy: Looking to the Year 2000 and states

that more than 90% of the workers in 1990 and 75% of those who will be working in 2000 are already in the work force today. . . The future of education and training is not preparing people for work but taking those people who are already out there and giving them new skills.

William E. Brock (1987:25-26), U. S. Secretary of Labor, the Chancellor's Office of the California Community College (Looking Ahead, 1987-88:7-8), and Gene Bottoms (1985:10-11), American Vocational Association Executive Director, concur and elaborate on the significance of these statistics to future skill needs in the workplace.

The community colleges have been institutions of change, with a focus on service to the local constituencies (Mehallis, 1983:26-29; Moore, Smith, and Campbell, 1984). These colleges can act as local service agencies with vocational-technical programs geared to the local labor markets (Breneman, 1981:210). Peel and Callas (1983:32) and Moody (1983:36) point out that the change rate of technology is challenging the abilities of colleges to remain current.

Hodgkinson (1982:235), past director of the National Institute of Education, suggests a newly developing trend:

American industry is showing renewed interest in and support for the public schools. For the most part, this support stems from enlightened self-interest; the better the educational programs in a community, the higher the quality of workers who can be attracted to that community.

Cetron, Rocha, and Luckins (1988:29-39) in "Into the 21st Century," indicate that

more businesses will be involved in schools, job-training programs, and community source programs. The investment of corporations in employee education and retraining--now some \$80 billion a year--will double by 2001. . . One-half of all funding for formal training will come from 200-300 large companies in business and industry; however, most new jobs will be generated by small businesses that cannot afford to pay for training.

The May 9, 1983 U.S. News and World Report's golden anniversary issue on "What the Next 50 Years Will Bring" suggests the same involvement of industry in employee training. In fact, it states that "Hundreds of corporations will grant degrees, most often in high technology, science and engineering, where state-of-the-art equipment and research will surpass that on most campuses."

Berg (1970) reflects on and challenges the value-added of education to employment requirements in Education and Jobs: The Great Training Robbery. Davis and Lewis (1975:85-117) discuss in Education and Employment various alternatives which either go through or bypass traditional educational institutions in meeting the competencies needed for the workplace. Gleason and Harvey deal with the perplexing question to whom the "open access" colleges should market their services.

If the expected outcome of a vocational program is employment (or advancement) of the vocational student, then we must view industry as the target market and the student as the product. It is inherently more sensible to design our curriculum to help students meet the demands of business and industry than to expect companies to adapt their employment policies to meet the needs of vocational graduates.

Wall (Crews, 1977:121-122) points out that

education for business curriculums should be based upon empirical evidence of the current and projected needs of the community. This would require continuing studies of employment needs (surveys, advisory committees, etc.) and continuous faculty and administrative contacts with local business and community leaders.

Forcese and Richer (1973:179-184) and Clover and Balsley (1986:50-73) recommend the usage of secondary data as background information to influence the decision making of the study. Nasatir (Smith, 1985:156) suggests that "before deciding that a new survey is absolutely essential, the researcher should also consider the possibility of conducting a secondary analysis of existing survey data that can be obtained from data libraries." A search of the literature did not yield any studies with the specific data needed for curriculum decision making specifically for the South County Community College District. However, magazines, such as PC World (Peterson, 1987), have done surveys of employers and reported extremely specialized data on a national basis.

Aspects of Questionnaire Development and Design

A search of the literature did not yield either useful secondary data or any educational institution's surveys of employers on typewriter and computer usage. Clover and Balsley (1984:53-73) recommend that published information as well as unpublished information be investigated. Three related in-house and external studies were acquired through administrator contacts.

As a result, the literature was used generally to provide information on various aspects of questionnaire usage and development. These resources included definition of terms, types and examples of questionnaires for surveys, advantages/disadvantages of mail surveys, formulating the research problem(s), the methodology of questionnaire design, related studies to employers of community college districts, response rate strategies influencing questionnaire content, and the use of a cover letter.

Definition of Terms. The use of the term questionnaire for this study follows Rummel and Ballaine's (1966:108) definition of "a data collection instrument or schedule to be filled out by an informant rather than by the researcher." Babbie (1973:41) differentiates the terms surveys from census: "a survey typically examines a sample from a population while census generally implies an enumeration of the entire population." Questionnaires can be used both in a survey and in a census.

Types and Examples of Questionnaires for Mail Surveys. Kidder (1981:148-152) and Clover and Balsley (1986:2-3) present methods of surveying: mail, telephone, and personal interviews. Oppenheim (1966:7-20) and Blalock (1970:36-38) discuss descriptive sample surveys and analytic, relational surveys. Babbie (1973:57-68) explains alternative survey purposes and designs. Sudman (1982:305-376) provides example surveys to residents and to a professional association dealing with attitudes. Solmon, Bisconti, and Ochsner (1977:167-169) present a sample follow-up survey of past students who were to relate their college education to their careers. Clover and Balsley (1986:175-177) exhibit a university's questionnaire on a housing study of students.

Advantages and disadvantages of mail surveys. Sletto (1940:193), an early writer who discusses the use of questionnaires by governmental agencies, rationalizes their usage based upon "the need for gathering data quickly to formulate new programs and to check upon their effectiveness." Oppenheim (1966:30-36), Miller (1970:76-77), Emory (1976:198, 282-283), Kidder (1981:148), Clover and Balsley (1984:125-126), and Galpin (1987) include lower cost, simultaneous distribution of uniform written questions, avoidance of interviewer bias, and the factor of time to find out answers among the advantages of written questionnaires. They

indicate that disadvantages to mail surveys include dependency on verbal behavior whereby the respondent can give "untrue or misleading answers" or just no answer at all. On the other hand, they indicate that mail surveys are the only practical means to get quantities of information from large numbers of identified study populations.

Formulating the Research Problem(s). As the foundation for developing a good questionnaire, Rummel and Ballaine (1963:46-48), Emory (1976:225-226), Kidder (1981:160), and Nasatir (Smith, 1985:154-155) emphasize the need to prepare a statement of the problem. Van Dalen and Meyer (1966:119-144), Emory (1976:203-206), Smith (1981:15-22), Sudman (1982:11-17), and Clover and Balsley (1984:19-37) provide various background procedures and/or checklists to follow in analyzing and specifying the nature of the research problem. Babbie (1973:133-136) proposes an operational framework to deal with the dimensions of variables involved in scientific instrument conceptualization.

Methodology and Considerations of Questionnaire Design. Emory (1976:208) relates that survey instruments usually involve three types of information: (1) sought data on facts, attitudes, preferences, or expectations, (2) classification and analysis of respondent characteristics, and (3) administrative data dealing with identification of the respondent, and the conditions of the survey. Long and Cognetta (1978) in Galpin (1987:7) report that questionnaire are usually sectioned into five parts: heading, procedural statements, actual items, comment space, and procedure for return.

Ferber and Verdoorn (1962:223-227), Rummel and Ballaine (1963:107-147), Oppenheim (1966:37-80), Van Dalen (1966:304-305),

Miller (1970:76-81), Babbie (1973:131-185), Berdie (1974:38-47), Dillman, et al. (1974:749), Emory (1976:207-230), Kidder (1981:159-178), Smith (1981:64-67), Sudman (1982:207-260), Sudman and Bradburn (Lockhart, 1984:37-42), Nasatir (Smith, 1985:165-172), and Clover and Balsley (1986:157-171) provide the bases for the conceptualization of the instrument's design. These include considerations regarding the following: (1) the construction and format of questionnaires--open-ended or fixed alternatives (closed) questions; (2) the information gained from explicit or inferred responses; (3) units of analysis; (4) the design of questions--a single large, complex question versus several simple questions; (5) the necessity of the questions in relationship to usefulness; (6) enough information provided the respondent to answer the question accurately; (7) question sequencing; (8) question wording; and (9) the desirability or undesirability of allowing respondents to consult records or other people.

Champion and Sear (1969:336) cite Goode and Hatt (1959) and Selltiz, et al. (1959) when reporting that "generally shorter questionnaires are returned more frequently." Sletto (1940:195), Champion and Sear (1969:337-339), Dillman et al. (1974:755), and Heberlein and Baumgartner (1978:451) present data which supports that good returns can be gotten from long questionnaires of several pages. The saliency or relevancy of the topic to the respondent is a key factor. Rummel and Ballaine (1966:124) indicate that "the length of a questionnaire should be dependent entirely upon the extensiveness of the data required and should not be controlled by the expected number of returns."

The length of questions is also an area of concern. Sudman (1982:36-37) reports that based on the studies done by Cieutat, 1964;

Greenspoon, 1955; Hildum and Brown, 1956; Krasner, 1958; Ogawa and Oakes, 1965; Salzinger 1959; Shaffer, 1955; U. S. Bureau of Census, 1971,

there is no general effect related to the number of words in the question of face-to-face interviews, but there is an effect in group and self-administered questionnaires. The shorter the question, the larger the negative bias. This is in direct contradiction to the general procedure of keeping questions on self-administered questionnaires as short as possible.

Related Studies to Employers of Community College Districts.

Anderson (1980) and Kidder (1981:159-160) recommend that questionnaire writers "borrow" questions from instruments that have been used. Three mailed questionnaires, which had been used by California community colleges as surveying instruments, were accessed.

One questionnaire, used by the San Ramon Center of the Contra Costa College District--an adjacent neighbor of Chabot College, had been sent to employers in the Contra Costa and Alameda counties. It focused on training needs, specifically short-term. Coffey and Randall (1984), of the Los Rios District, did an extensive assessment study of training needs in the Sacramento, California area. This study of employers focused on the hiring expectations and the entry training level needs; it concluded with a couple of recruitment questions. Their specific questionnaires regarding the Computer Programmers, the Computer Data Entry Operators, and Word Processing Operators did include a question relating to typewriter and computer equipment usage. A Chabot College, in-house questionnaire (Hunter, 1986), which surveyed the faculty on training needs related to computer usage and applications, was also referenced.

Questionnaire Formatting and Layout. The questionnaires used by the Contra Costa district, the Los Rios district, and Chabot College, as well as those supplied by Solmon, Bisconti, and Ochsner (1977:167-169),

Sudman (1982:305-376), and Clover and Balsley (1986:175-177), provided visual and content ideas on organizing and formatting the questionnaire to be developed. They were referenced also for form and style. In addition, surveys of computer magazines, such as PC World (Peterson, 1987) and Academic Computing of October, 1987, were used as references for technical wording of the questions.

Rummel and Ballaine (1966:124) and Dillman, et al. (1974:746)) indicate that manipulations need to be applied to the design of questionnaires to increase the response rate. Such manipulations include photo-reduction, multilithing into booklet form, presentation in visually attractive manner. Besides the fourteen format considerations, Berdie (1974:34-36, 62) recommends formatting the questionnaire's text to allow for "white space" to avoid a sense of overcrowding the page(s).

Response rate strategies that influence questionnaire content.

Various strategies, such as appealing to the respondent with a salient topic, accessing the right person in the organization to complete the questionnaire, using precoded questions, including deadline data on the instrument, and using a cover letter instead of putting the purpose on the questionnaire, affect the content and appearance of the form itself.

Most of the discussion in the literature in relationship to response rates were oriented toward attitude-type questionnaires, which were sent to populations other than employers. Heberlein and Baumgartner's (1978:452) study contrasted students, general populations, employee populations, and military personnel. They report that students, employees, and military personnel tend to return questionnaires more than the general population. They believe that variations in mail responses relate to the number of contacts and the salience of the topic to the

respondent. Saliency or importance of the questionnaire topic to a respondent is expected not to be high, unless that person is trying to make decisions related to the topic or has intense opinions about the topic: this concept is supported by Heberlein and Baumgartner (1978:459), Champion and Sear (1969:335).

The Coffey and Randall (1984:2) survey, which was sent to local employers, indicated less than a 20 percent response rate for their first occupational survey series and an increased 50 percent return on the second series based upon more attention to response-rate factors. The results of the Contra Costa District's survey were not available. Heberlein and Baumgartner (1978:469) suggests that in surveying employers "the respondent may feel that potential occupational retaliations from not returning a questionnaire represent a higher cost than the time and effort to complete it."

Daniel (1975), Bailar and Lanphier (1978), Sinaiko and Broedling (1976), and Walters (1985) discuss the resistance of people in answering questionnaires. Sosdian and Sharp (1980) and Anderson (1986) state that people with access to the instrument do cooperate with well-designed questionnaires.

Stevens (1974) studied the rate of return effects of using precoded and not precoded questions. His results indicate an insignificant 2% difference. Shale's (1986) research on including pre-coded information about the respondent on the questionnaire found that it "does not impair return rates."

The inclusion of a deadline data on mail questionnaires, according to Henley (1976:374-375) and Roberts, McCrory, and Forthofer (1978:407-410), encourage early response rates, thus reducing the costs

of followup mailings. In comparison to other variables affecting rates of response, the Roberts, MCrory and Forthofer (1978) study of personalization, social appeal, and response deadline used the following time track: three-week deadline with two follow-ups four weeks apart. The Childers, Pride, and Ferrell (1980) study sent follow-up letters one week after the questionnaire mailing. The research literature did not focus on the "best amount of time" to allow respondents of any type; instead it dealt with various techniques, strategies, and numbers of follow-up contacts.

General information about the purpose and need for response can be placed either at the questionnaire's beginning or in an accompanying cover letter. To increase response, Dillman, et al. (1974:746) and Berdie (1974:59-60) suggest that the questionnaire have a cover letter which emphasizes the social usefulness of the study and which indicates the importance of each respondent to the study's success. Longworth (1953:310-313), Simon (1967:28-30), Andreason (1970: 273-277), and Dillman, et al. (1974) suggest that the respondent's importance can be emphasized further by use of personalization procedures, such as using the person's name or using a personal signature. On the other side, Linsky's (1975) and Labrecue's (1978) research, which used or did not use personalization, indicate that some studies using personalization gained with its use while other studies using personalization gained no advantage. Roberts, McCrory, and Forthofer's (1978:409) work confirm this view.

Validating and Pre-testing the Questionnaire. Sletto (1940:199-200), Babbie (1973:205-221), and Sudman (1980:284-285) emphasize the importance of pretesting to increase the reliability and

validity of responses to questionnaires. Anderson (1980) recommend that "borrowed" questions developed and tested by "experts" also need to be pretested "with the population who will respond to the questionnaire" Kidder (1981:132) establishes "face validity . . . [as an evaluation] by a group of judges, sometimes experts, who read or look at measuring technique and decide whether in their opinion it measures what its name suggests." Berdie (1974:47) recommends using questionnaire experts to review the instrument. Emory (1976:207), and Clover and Balsley (1984:78-79) suggest that instrument testing can be done among "one's colleagues." Emory adds that

After this "in-house" testing it should be revised and taken to the field for testing. The fact that it is only a test should normally not be conveyed to the respondent, for motivational reasons.

Babbie (1973:206-207) and Berdie (1974:47) indicate that pre-testing should include sending the questionnaire to a sample of people as similar as possible to the people who will be receiving the actual final questionnaire.

The Involvement of Staff in Needs Assessment and Curriculum Monitoring.

The Carnegie Council for the Advancement of Learning (1978:257) explains that curriculum change involves recognition of the need to change. Finch and Crunkilton (1985:32-33) provide several questions (Appendix A) for faculty to ask themselves in "Is Your Curriculum Ready for the Nineties?" emphasizing the need to be "in tune with the future of your community" and the "technological changes in the workplace." Whitehead (1983:19-20) alerts faculty on five major points on which high-tech curriculum should be structured to "address a human resources problem that includes not only training for entry, but the retraining of

millions of people already in the workforce." Choate and Linger (1986:26-29) and Brock (1987:25-26) discuss the training/retraining needs of the "high flex" workforce of the future.

Hunkins (1980:15-22) provides a Curriculum Development Model from which the concept of Diagnosis and Maintenance are utilized as the reasons for the needs assessment questionnaire: "It is impossible to create a program or unit for all time, even a program or unit appropriate for five years." Goodlad (Roueche and Herrscher, 1973:1-13) projects the "massive task of change" in education in order to meet the technological and societal changes. Sanders and Chism (1985:28-30) in "Updating Curriculum: A Process That Never Ends" discuss the challenges involved in addressing such change.

Meierhenry (Margolin, 1970:153) states the following:

One grave problem in all professional fields today is how practitioners are to be kept up-to-date about new content, methods, and practices. Teachers are not exceptions to this rule . . .

Mehallis (1983:29), Holloway (1983:56), and Geber (1987) concur and elaborate on the need to address potential teacher obsolescence, which impacts the nature of the curriculum. Doll (1978:339-340) indicates that "curriculum materials express the values and ideals of their producers; the producers become increasingly important curriculum makers."

Often, however, faculty are resistant to change for various reasons, such as fear of threat in change of status, as presented by Hunkins (1980:45-52). Part of this resistance may also be due to the differences of information, and thus opinion, among faculty. Utah Community College (National Institute for Staff and Organizational Development, 1988) approached differences of faculty opinion and/or resistance on the issue of teaching students keyboarding skills on

typewriters or computers by doing experimental research. The abstract states that "faculty were willing to re-evaluate their decisions and became less resistant to changing traditional teaching methods" when the results of the research data became known.

Bevis (1973:154), Hunkins (1980:324), and Cook (1981:32) indicate that curriculum monitoring and change must involve participants in a voluntary way to promote the sense of teamwork in the project. According to Hunkins (1980: 321-333), there needs to be "teamwork among the supervisors of instruction and curriculum, as well as curriculum persons expert in the overall dynamics of curriculum activity." Bradford and Cohen (1984:185) and Lewis ((1986:64-75) suggest a "joint" decision making style wherein the problem is shared with the group; members generate and evaluate alternatives with the decisions being the consensus of the group(s).

PROCEDURES

1. The literature was reviewed for the following items: (1) the need for research relating to technological changes in the office; (2) the aspects of questionnaire development and design; and (3) the involvement of staff in research and curriculum change. The review of literature was expanded from that described in the proposal to include topic (1) to establish a background of how technology change in the office has been and will be affecting the curriculum. It was also expanded to include topic (3) because the procedures involved a committee of faculty and administrators.

2. An initial committee was formed of the twenty-three full-time faculty from both campuses who teach in office and business computer education with an administrative resource person.

3. A meeting was scheduled and held to determine the curriculum objectives of the proposed institutional research, to develop a statements of the problem to be researched, and to set a tentative time frame and process for developing and validating the questionnaire. The committee also decided through consensus that the Project Facilitator would summarize the discussion of the meeting and provide a preliminary working document with example close-ended questions for each member of the committee. The two documents were sent to each individual of the committee to use as the basis for submitting additional and more specific questions with comments and critique.

4. The proposed questions and suggested revisions from individual faculty members were incorporated into a developing questionnaire document and edited for consistency and form.

5. The faculty members of the committee at each campus met with the college's Institutional Research Coordinator (1) to review, analyze, and evaluate the questions and (2) to set the ordering of questions. Draft #1 (Appendix C) Draft #2, and Draft #3 evolved from these meetings.

6. The committee charged the Project Facilitator to finalize the wording and formatting of the questionnaire with the Institutional Research Coordinator.

7. Draft #4 was sent to the committee for a last review before the pilot. In addition, it was sent to three additional "experts" for their evaluation and recommendations. The evaluation by the "experts" was added to the procedures based upon the recommendation of the literature.

8. Draft #5 was sent to an administrator at Hayward Campus and to an administrator at Valley Campus for pre-testing. It was also sent to

ten different sized employers for their completion and evaluation. The final product is Appendix D. The validity and reliability, therefore, had to be determined on the basis of faculty consensus and the pretesting process.

Limitations

The design of the questionnaire was limited by failure to find a similar questionnaire in the literature so that questions could be borrowed, as recommended by Anderson (1980) and Kidder (1981:159-160). The design is also limited by the fact that the literature is almost void of studies on questionnaires from educational institutions to local employers. The formatting and layout of the questionnaire was limited by the word processing capabilities of the Wang VS minicomputer, which served as the vehicle for producing the document.

Assumptions

It was assumed that a written questionnaire should be used in place of an oral interview because the information desired was essentially factual in nature and would require the respondent to do some on-site counting and checking. It was assumed that the written questionnaire would provide the greatest return for limited time and resources available to do the study.

RESULTS

In order to do the study, a background review of the literature on the impact of technological changes in office equipment provided the faculty and administrators of the committee with information to help them

become aware of trends and related factors that were larger than setting next year's curriculum and budget. This literature reflected the challenges facing community colleges (1) in coping with the effects of fast technological change in the workplace, (2) in becoming more research and development oriented, and (3) in channelling resources and curriculum toward the needs of employers and employees within the service communities. This literature influenced the decision that two studies were needed: (1) a study on equipment and software and (2) a study on training needs. The literature also provided support for processes of staff involvement in needs assessments relating to curriculum monitoring.

The literature supplied background information, strategies, and techniques for developing a mail questionnaire to study employers' usage of typewriters and computer hardware/software. The literature provided the following:

1. types and examples of questionnaires for mail surveys,
2. the advantages and disadvantages of mail surveys for data collection,
3. formulating the research problems,
4. methodology and considerations of questionnaire design,
5. related studies to employers of community college districts,
6. questionnaire formatting and layout,
7. response rate strategies that influence questionnaire content,
8. validating and pre-testing the questionnaire.

A committee was formed of twenty-three full-time faculty who taught and/or who might become involved in computer/typewriter education. The sixteen faculty who work at the Hayward campus and the five faculty who work at the Valley campus were instructors of classes in

Computer Information Systems, Business Office Skills, Accounting, and Marketing. The Coordinator of Institutional Research served as the main administrative resource. The Assistant Dean who was to serve as the administrator resource person was reassigned to a different job; consequently, the Acting Chair of the Business Division at the Hayward Campus was available for assistance.

A portion of a regularly scheduled division meeting was set aside for the initial discussion of the project. The faculty requested that a memo with options be sent to each of the committee members in order to determine the most convenient time for the group to meet. The returned information brought about the separate meetings of the faculties at each campus. The scheduling and meetings at each campus made further joint meetings impossible within the time frame of getting the questionnaire prepared for the pilot by the end of the quarter.

At the first meeting at both campuses, faculty concerns about curriculum development and planning relating to typewriter and computers were expressed. The purpose of the questionnaire was discussed in terms of information gathering to assist in curriculum monitoring and budget planning. The committee determined that the research needed to involve collection of data relating to equipment, commercial and custom software applications, and programming. The statement of the problems to be researched were based on that determination (Appendix B). The Hayward faculty on the committee determined that the Project Facilitator would summarize the discussion of the meeting and provide a preliminary working document with suggested examples of potential questions. The Livermore faculty concurred.

The Wang VS was used as the computer resource to produce the documents for the study. After the the Statement of the Problems and the example questions were compiled, they were sent to the faculty of both campuses for them to review and respond. The faculty submitted potential questions and suggested adjustments to the wording of the problem statements.

A second meeting was held at the Hayward campus to discuss the six-page, double-spaced first draft of the questionnaire (Appendix C), which had been forwarded to the committee and the Coordinator of Institutional Research before the meeting. Although it was scheduled to discuss all aspects of the questionnaire, the two-hour discussion focused on the content of page 1, to whom the questionnaire should be sent, what potential reward could be provided the respondent, and the reply timeline of two weeks. It was suggested that a survey, rather than a census, of the district's employers be done due to limited resources. It was proposed that a cover letter be sent to the president of the company requesting delegation of the task of completing the questionnaire to an appropriate person to increase the likelihood of responses. It was recommended that the respondent be offered a copy of the results if requested. Lastly, the Coordinator of Institutional Research provided many suggestions toward the improvement of the structure and content of the questionnaire.

A second draft evolved from that meeting and was forwarded to the Livermore faculty of the committee. The second meeting of this group agreed with the recommendations of the Hayward faculty and Coordinator of Institutional Research. It worked on grouping and sequencing questions, as well as debating on the need for some questions. In particular, it

suggested that the questions not deal with the clustering and arrangement of computer hardware but rather with the different categories of hardware--mainframe, minisystems, workstations, microcomputers, and dedicated word processors--and the applications for which they were used. The third draft evolved from that meeting.

The third draft was shared with the Hayward faculty and Livermore faculty. Each group suggested additions and adjustments to content and layout, with the goal of keeping the questionnaire within four pages for pamphlet form. Although questions about maintenance were important to some Hayward faculty because they wanted to know what effects maintenance costs had on computer purchases, they were omitted to allow space for question 6 on planned equipment changes in the next three years. Faculty at both campuses wanted a trend indicator for the past five years of typewriter replacement in question 16. Both groups agreed that an ending note requesting the respondent to suggest the name and position of a person to complete a second questionnaire on training needs be included at the end of the document. With a consensus on the content and order, both the Hayward faculty and the Livermore faculty suggested that the Project Facilitator work through the questionnaire with the Coordinator of Institutional Research for its completion.

Draft #4 was printed on eleven-inch by seventeen-inch paper and reduced to 85 percent, keeping within the guideline of a four-page document. It was sent to the faculty on the committee with a note to write in any last changes. It was also evaluated by William Threlfall--Coordinator of Institutional Research, Dr. Elizabeth Rose--Coordinator of Office/Computer Instruction at Amador High School and part-time instructor at Chabot College, and an employee in Office Support Services at the Lawrence Livermore National Laboratory. The

following recommendations were made: (1) both Hayward and Livermore Campuses be mentioned by city of location for employer identification; (2) "of Respondent" be added after "Name" and "Position" in the opening; (3) add a [] 0 option under 1.c., 2.b., 3.b. and reword the direction, such as "(Check or complete 1 for all that apply)", to "(Check one.); (4) change last section's name from "CLERICAL AND SECRETARIAL SUPPORT" to "OFFICE SUPPORT EQUIPMENT"; (5) ask how long the organization's facility has been in existence. All of the recommendations were used, except the last recommendation for which there was no available space for a point of interest but not of actual need.

Draft #5 was sent with a cover letter to twelve employers, including Chabot College's two campuses for completion and assessment. The following recommendations were made through either written comments on the questionnaire or telephone communications: (1) a place to check the nature of the organization--i.e., a headquarters or branch; (2) the addition of the city within which the company was located at the beginning of the document; (3) the addition of "Services" to the listing of Industry Type; (4) a change to item 1.b. from three listed items to two--i.e., remove "[] at a computer service" and "[] timeshare off site within California or out of state" and replace it with "[] off site. Please specify: [] local [] outside Bay Area." The result of the pretest was Draft #6, the final document (Appendix D).

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

Discussion

Conditions, requiring a needs assessment in the business curriculum areas involving typewriters and computers, had become apparent to faculty and administrators at both campuses of Chabot College. There

existed a sense of continued, dramatic technological change, as expressed in the first section of the literature review. Interwoven with that sense, there were various opinions--some agreed upon and some very contradictory--of what direction the equipment/supply purchases, and thus the curriculum, should take. With a proposal of doing a needs assessment coming from a faculty member, the President's Administrative Council supported the concept of a district-wide assessment of employers' computer and typewriter usage and applications (Gollattscheck, 1976:24-43; Gagne and Briggs, 1979:23-25; Lucas in Jedamus, 1981:240; Cook, 1981:22-23; Herrscher, Mizell, and Pautler, 1986:23-25; Anderson, 1977; Lea, 1988).

This study was the first major step in the objective of doing such an assessment. It resulted in the development of a four-page questionnaire titled: "South Alameda County Employer Questionnaire on Computer and Typewriter Usage."

Before starting this project, the literature was reviewed for potential secondary sources of data, as suggested by Nasatir (Smith, 1985:156). The use of secondary data was not possible due to two factors: (1) "community college districts do not follow standard geopolitical boundaries" (Chancellor's Office, 1983:8) and (2) no data covering the assessment of computer and typewriter equipment used in offices was available. The literature on curriculum and program planning, development, and evaluation does not emphasize research on equipment used in the workplace, rather on the generalized skills to be learned for the workplace, such as the Coffey and Randall study.

Because no questionnaire was available to use for surveying employers on usage of typewriters and computer hardware/software, local resources had to be utilized in conjunction with information from the

literature. Essentially, the committee dealt with what needed to be included in the questionnaire, leaving how the content would be presented to the Coordinator of Institutional Research and the Project Facilitator.

The committee of business faculty and resource administrators considered the areas of concern for curriculum maintenance, monitoring, and development instruction relating to computers and typewriters, as suggested by Meierhenry in Margolin, 1970:153; Goodlad in Roueche and Herrscher, 1973:1-13; Carnegie Council for Advancement of Learning (1978:257); Hunkins, 1980:15-22, 321-333; Whitehead, 1983:19-20; Frinch and Crunkilton, 1985:32-33; Sanders and Chism, 1985:28-30); Choate and Linger, 1986:26-29; Brock, 1987:25-26.

The committee developed its concerns into statements of problems (Appendix B), as recommended by Rummel and Ballaine (1963:46-48), Van Dalen and Meyer (1966:119-144), Meyer (1966:114-144), Emory (1976:225-226), Smith (1981:15-22), Kidder (1981:160), Sudman (1982:11-17), Nasatir (Smith, 1985:154-155), and Clover and Balsley (1984:19-37). Using Babbie's (1973:133-136) suggestion, the statements were developed into the operational framework for the questionnaire's logic. The body of the questionnaire, therefore, had four main categories or sections: (1) Equipment and Applications, (2) Commercial Software Usage, (3) Computer Programming, and (4) Office Support Equipment. Each section was accompanied with a brief statement of what information was being sought to help guide the respondent.

The committee was interested in the brands and the number of different sized computers that were being used for different functions--i.e., word processing, accounting, spreadsheets, data base, telecommunications, marketing, graphics, and desktop publishing. That demand lead to the adoption of the grid, used in similar form in Academic

Computing (October, 1987). The other considerations, strategies, methodologies, and techniques were identified in the literature and were integrated in developing the questionnaire. Technical wording for computer hardware and software were (1) contributed by the faculty and the Institutional Coordinator, (2) taken from the results of a microcomputer survey PC World (October, 1987), and (3) extracted from the Academic Computing (October, 1987) survey form.

Pre-coding the questionnaire for respondent characteristics and for computer-directed data entry are two available options. Even though Shale's (1986) results indicate that pre-codings have no effect on response rate, the committee determined that the questionnaires would not be pre-coded either at the beginning or at the end with "personal data", such as the size and type of the company. The open-endedness format at the beginning of the questionnaire would allow company officials to classify and provide the data themselves. The committee also decided not to use computer-directed precoding of the questions because of (1) the complexity of response patterns and (2) the crowdedness of the layout.

Stevens (1974) indicated that coding made little difference in the responses.

The faculty at both campuses believed that the purpose and request for completing the questionnaire be established in a cover letter rather than be included in the somewhat lengthy questionnaire. This decision is supported by Longworth (1953:310-313), Linsky (1965:183-189), Simon (1967:28-30) and Andreason (1970: 273-277). The faculty agreed that by sending a cover letter with the questionnaire to the president of the company, the president would forward the questionnaire to a person who would understand the key words and phrases relating to computers.

The committee decided that the timeline for completing and returning the questionnaire would be a two-week period so that employers would not tend to set it aside. This timeline falls within parameters given by Stevens (1974), Henley (1976:374-375), Vocino (1977:76-77) and Roberts et al. (1978:407-408). Childers, Pride, and Ferrell's (1980) study recommends that the variable affecting the response rates of different populations be studied by parallel studies.

During the process of developing the questionnaire, the faculty, who taught in business areas with computer and/or typewriter usage, were invited and kept informed about the development of the questionnaire. Initially, they had determined that each one would individually respond to and submit questions for the questionnaire, allowing the voluntary participation of faculty as a project. The whole sense of voluntary contribution was carried out throughout the project, as described essential by Bevis (1973:154), Hunkins (1980:324), and Cook (1981:32). At each meeting, every area--accounting, computer information systems, office skills, and marketing--was represented by faculty members. Some faculty attended each meeting; others who could not attend a meeting sometimes contributed ideas through written and verbal communications to the Project Facilitator. The accounting faculty at the Hayward campus contributed the least to the questionnaire development process.

One goal of this project was to develop a sense of teamwork among the instructors in curriculum monitoring and budget planning, as suggested important by Bevis (1973:154), Hunkins (1980:324), and Cook (1981:32). Furthermore, the group process of developing objectives of the research, as well as participating in a homemade instrument, developed individual investment in the total project.

Implications

The use of this questionnaire and the resulting data will add to information known about the training of skills needed, based upon actual purchase and usage of typewriter and computer equipment and software in the workplaces within the communities serviced directly by Chabot College.

The use of the questionnaire implies that the resulting data would provide new, more objective means for faculty and administrators (1) to examine the strong and weak points of the office-related curriculum; (2) to base budget-related decisions upon; and (3) to anticipate future program changes with equipment, supply, and staffing needs.

No matter how well the questionnaire has been designed and formatted, the factor of time completion, access to the right potential respondent, and salience will be matters to address in the cover letter.

Even if used, implementation of the questionnaire will only provide data for an eight-year period: the past 5 years through question 16 on typewriter replacement on page 4 and the future 3 years through question 6 on page 3.

The voluntary participation of faculty in the development of the questionnaire implies their professional investment in the research which will reduce resistance of the data collection.

The results of the study imply that the development and use of questionnaires for assessment purposes of local employers' needs are not simple tasks for faculty units, whether on one campus or on two campuses. Generally, faculty have not been trained in questionnaire development for external or internal needs assessment (Moody, 1983). The group processes involved in this study provided a new opportunity for faculty to learn more about processes developing needs assessment instruments, in addition to team building techniques.

Recommendations

Based on the results of this study, it was recommended by the committee that the following actions be taken.

1. The questionnaire should be used for field survey of a random sample of small (under 100 employees), medium (101 - 500 employees), and large (over 501 employees) employers in the district. Such classifications of survey respondents are suggested by Blalock (1970:36-38) because it was unknown what computer and typewriter usages would occur in different sized business.

2. The literature be further reviewed for scientific techniques of determining the size of a reliable sample and the methodology for doing the random sample.

3. The mailing procedures of the questionnaire include personalization as much as possible with computer technology.

7. Factors affecting response rates should further be reviewed and considered for implementation.

4. The data collected would be analyzed to provide essential information for the development of future program planning and curriculum development, as well as for institutional decision making in budgeting for equipment, supplies, and staffing.

5. A follow-up questionnaire be developed to survey specific training needs of employers, using a similar procedure of questionnaire development applied in this study.

6. A similar study be made on office equipment involving keyboarding in three to five years. This study should be done through the Office of Planning and Community Relations in conjunction with faculty input and involvement.

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APPENDIX A
CURRICULUM CHECKLIST
by Finch and Crunkilton, 1985

Is Your Curriculum Ready for the Nineties?

by Curtis R. Finch
and John R. Crunkilton

Curriculum Checklist

	Yes	No
1. Is your curriculum content based on future as well as current worker needs?	☐	☐
2. Will your curriculum accommodate technological changes in the workplace?	☐	☐
3. Is your curriculum in tune with the future of your community?	☐	☐
4. Do you tell your students what the workplace will be like in the future as well as what it is like right now?	☐	☐
5. Do you expose your students to equipment before the equipment sees widespread use in the workplace?	☐	☐
6. Does your curriculum emphasize skills that will enable your students to cope with changing work environments?	☐	☐
7. Does your curriculum allow you to incorporate instruction in academic skills needed to strengthen vocational proficiencies?	☐	☐
8. Are you aware of future trends in your subject area?	☐	☐
9. Do you collaborate with non-vocational teachers to produce graduates who will be attractive to employers of the future?	☐	☐
10. Do you participate in professional and technical continuing education programs?	☐	☐
11. Are your advisory committee members futuristic in their thinking?	☐	☐
12. Does your curriculum take advantage of the newest instructional support systems?	☐	☐
13. Do you prepare your graduates to continue their education throughout their careers?	☐	☐

APPENDIX B
STATEMENTS OF THE PROBLEMS

APPENDIX B

CHABOT COLLEGE

STATEMENTS OF THE PROBLEMS

1. What kinds and sizes of computer equipment are employers presently using for different applications?
2. What configurations of typewriters and computers are employers presently using for office applications?
3. What are the equipment replacement and/or purchasing trends?
4. What software application packages are being used by employers?
5. What kinds of programming languages are being presently used in the workplace and what is the future for their use?

APPENDIX C
DRAFT #1 OF QUESTIONNAIRE

Company Name _____

Company Type _____

Number of employees _____

Location Status: _____ Headquarters

_____ Division Headquarters located _____

_____ Division or Department with Main Office _____

_____ Branch Headquarters located _____

Person answering survey: _____ Management Information System Manager

_____ Computer Operations Director

_____ Word Processing Director

_____ Data Processing Director

_____ President

_____ Vice President _____

_____ Other _____

Instructions: Please try to answer for your site. If the organization has many large divisions, which are compartmentalized, please help by forwarding each of them a copy, or contact Chabot for additional forms. Thank you.

Example Questions for Survey

What is your company's arrangement of its computer hardware?

_____ 1 main centralized data/word (information) processing center

_____ a main centralized data processing center and a separate word processing center

_____ 3 to 5 computer centers

_____ Number of data processing

_____ Number of word processing

_____ more than 6 computer centers

_____ Number of data processing

_____ Number of word processing

_____ a main center and clusters (a cluster is 2 or more computers)

_____ no centers, rather clusters of workstations sharing printers

_____ no centers or clusters; standalone microcomputers each with its own printer

_____ Combinations: center, clusters, standalone microcomputers

_____ Portable terminals for telecommunication to site

_____ Other - Please describe

Computer Centers and/or Clusters

If you have computer centers or clusters, what type of computer system(s) are you using?

_____ Mainframe on site _____ at headquarters
location _____

_____ Mainframe timeshare off site _____ in Bay Area
_____ in California
_____ out of state

Type of Mainframe used _____

_____ Minisystem _____ shared logic Number of systems _____
_____ distributed logic Number of systems _____

_____ Linked microcomputers (Local Area Network)

_____ Standalone microcomputers

_____ Cabled to a Mini or Mainframe

Number of microcomputers: 0-10 _____; 11-20 _____; 21-30 _____; over 31 _____

How are your microcomputers arranged?

_____ separate area or room for all
_____ at workstations throughout the company
_____ combination

What type of microcomputers are you using?

_____ IBM PC # _____
_____ IBM LOOK-A-LIKES # _____
_____ Applies # _____
_____ Other # _____ Types _____

How is maintenance done:

_____ outside monthly service
_____ pay as you need
_____ fix it yourself

Is your company satisfied with the maintenance service?

_____ Very pleased
_____ Satisfied
_____ Dissatisfied

Will future decisions on computer hardware be based upon this service?

_____ Absolutely
_____ Most Likely
_____ Probably
_____ Change is definitely needed
_____ Not a problem

Computer Programming

Does your company employ Programmers?

- ☐ Yes How many?
☐ Not any more
☐ Never has hired programmers: always used consultants
☐ Never has needed to hire programmers: used purchased software

What types of programs have these programmers written?

- ☐ spread sheets
☐ data base
☐ accounting: Payroll
Accounts Receivable
Inventory
☐ System utilities
 Other:

What programming language is used?

- ☐ BASIC
☐ COBOL
☐ PASCAL
☐ C
☐ Other:

Does your company plan to continue using the programming language during the next three to five years?

- | | | |
|---------------------------------|-------------------------------|--|
| ☐ BASIC | Continue <input type="text"/> | Abandon <input type="text"/> in what year <input type="text"/> |
| ☐ COBOL | Continue <input type="text"/> | Abandon <input type="text"/> in what year <input type="text"/> |
| ☐ PASCAL | Continue <input type="text"/> | Abandon <input type="text"/> in what year <input type="text"/> |
| ☐ C | Continue <input type="text"/> | Abandon <input type="text"/> in what year <input type="text"/> |
| ☐ Other: | <input type="text"/> | |

Is your company moving toward using a simplified programming system?

- ☐ ***** need program names*****
☐
☐
☐ Other

Software Usage

How are your computers being used and with what software?

- ☐ word processing
☐ spread sheets
☐ data base
☐ operating system
☐ accounting: Payroll ☐
 Accounts Receivable ☐
 Inventory ☐
 Cash Receipts/Disbursements ☐
 Installment loans/payments ☐
 Other: ☐
☐ Communications to other geographical locations
☐ Other: ☐

For what purpose(s) are your computers mainly used for?

Please rank in priority order:

- ☐ word processing
☐ spread sheets
☐ data base
☐ operating system
☐ programming languages
☐ accounting: Payroll ☐
 Accounts Receivable ☐
 Inventory ☐
 Cash Receipts/Disbursements ☐
 Installment loans/payments ☐
 Other: ☐
☐ Communications to other geographical locations
☐ Other: ☐

Check the software used by your company for Word Processing:

- Don't use word processing ☐
 IBM Displaywrite ☐ Wang ☐
 WordStar Professional ☐ MultiMate ☐
 WordStar Release 4 ☐ Word ☐
 WordStar 2000 ☐ PC Write ☐
 WordPerfect ☐ PFS Write ☐
 Other: ☐

Check the software used by your company for spread sheets

- _____ Don't use the computers for spread sheets
_____ Lotus
_____ Symphony
_____ Other:

Check the software used by your company for data base.

- ☐ Don't use the computers for data base
☐ d Base II
☐ d Base III
☐ R Base
☐ PFS File
☐ Other

Check the software used by your company for operating system utilities

- Other _____

Check the software used by your company for accounting.

- _____ Don't use the computers for accounting
- _____ Payroll _____ Custom programmed
Name of Purchased Software _____
- _____ Accounts Receivable _____ Custom programmed
Name of Purchased Software _____
- _____ Inventory _____ Custom programmed
Name of Purchased Software _____
- _____ Cash Receipts/Disbursements _____ Custom programmed
Name of Purchased Software _____
- _____ Installment loans/payments _____ Custom programmed
Name of Purchased Software _____
- Other: _____
- _____ Shared accounting information to other geographical locations

What kinds and numbers of typewriters are used in your company?

_____ Manual Carriage Typewriters # _____

_____ Electric Carriage typewriters # _____

_____ Selectrics # _____

_____ Wheelwriters # _____

Other _____

Has your company tried eliminating all typewriters and converted all work to computers?

_____ Yes

_____ No.

If Yes, please answer below:

Was this change fully successful? _____ Yes _____ No

What were the difficulties encountered? _____

What were the advantages encountered? _____

How many of the office workstations for clerical, secretarial, and word processors have

_____ only typewriters

_____ a microcomputer with a printer and a typewriter

_____ a microcomputer with a shared printer and a typewriter

_____ a computer terminal and a typewriter

_____ an electronic typewriter attached to a micro CPU and disk drive

_____ only a microcomputer with a printer

_____ Other: _____

APPENDIX D
FINAL DRAFT OF QUESTIONNAIRE



SOUTH COUNTY
COMMUNITY
COLLEGE DISTRICT

CHABOT COLLEGE

Hayward and
Livermore
Campuses

South Alameda County Employer Questionnaire on Computer and Typewriter Usage

Company Name _____ (Check one below.)
 Name of Respondent _____ ☐ Headquarters
 Position of Respondent _____ ☐ Branch: _____
 city _____

(Check one of the following)

Industry Type: ☐ Agriculture
☐ Construction
☐ Manufacturing
☐ Communications
☐ Transportation
☐ Wholesale Trade
☐ Retail Trade
☐ Services
☐ Finance, Insurance, Real Estate
☐ Public Sector. Please specify: _____
☐ Other. Please specify: _____

(Check one of the following)

Estimated Number of Employees: ☐ 1 - 25
☐ 26 - 50
☐ 51 - 100
☐ 101 - 200
☐ 201 - 500
☐ 501 - 1000
☐ 1001 - 2000
☐ over 2001

As a respondent, would you be interested in receiving a copy of the results of this survey?

☐ Yes

☐ No

EQUIPMENT AND APPLICATIONS

In this section, we would like to know what types of computer equipment are being used in the office, the volume of usage, and the kinds of applications on different hardware.

1. Mainframe or minicomputers

- a. For what types of office functions does the company use mainframe or minicomputers? (If applicable, check one or more)

	Word Processing	Accounting	Spread Sheets	Data Base	Telecommuni- cations	Marketing	Graphics	Desktop Publishing
Burroughs								
Control Data								
DEC								
Hewlett/Packard								
Honeywell								
IBM								
Prime								
Sperry								
Wang								
Other:								

- b. Where are these located? (Check all that apply.)

☐ on site

☐ off site. Please specify: ☐ local ☐ outside Bay Area

- c. How many mainframe or minicomputer systems are located at the company's site? (Check one.)

☐ 0

☐ 1

☐ 2-3

☐ 4-5

☐ over 6 Please specify estimated Number: _____

2. Workstations

- a. Which of the following computer systems does the company use for office functions?
(If applicable, check one or more)

	Word Processing	Accounting	Spread Sheets	Data Base	Telecommuni- cations	Market- ing	Graphics	Desktop Publishing
Apollo								
IBM RT								
VAX Stations								
Hewlett/Packard 9000 Series								
Sun								
Other:								

- b. How many workstations are located at the company's site? (Check one.)

☐ 0
☐ 1-5
☐ 6-10
 ☐ 11-15
☐ over 16 Please specify estimated number: _____

3. Microcomputers

- a. Which of the following computer systems does the company use for office functions?
(If applicable, check one or more)

	Word Processing	Accounting	Spread Sheets	Data Base	Telecommuni- cations	Market- ing	Graphics	Desktop Publishing
Apple II								
Apple Macintosh								
Apple Macintosh II								
A T & T								
Compaq Deskpro								
Compaq Portable								
DEC (IBM compatible)								
Hewlett-Packard								
IBM PC								
IBM PS/2								
IBM XT								
IBM AT								
NCR								
Tandy(IBM compatible)								
Texas Instrument Professional								
Zenith								
Other:								

- b. How many microcomputers are located at the company's site? (Check one.)

☐ 0
☐ 1-10
☐ 11-20
☐ 21-40
 ☐ 41-60
☐ 61-80
☐ over 61 Please specify estimated number: _____

- c. Which of the following ways does the company use microcomputers?
(Check one or more)

☐ separately
☐ linked in a Local Area Network
☐ cabled to a mainframe or minicomputer

4. Dedicated Word Processors

- a. Indicate the number of dedicated word processing terminals the office is using.
(If applicable, check 1 or more)

	1 - 10	11 - 20	21 - 30	31 - 40	41 - 60	Over 61: Indicate Number
IBM Office System 6						
Lanier						
NBI						
Wang						
Xerox						
Other:						

5. Indicate the frequency of usage of computer applications.
(Use H for High Frequency, M for Medium Frequency, L for Low Frequency usage.)

	Word Processing	Accounting	Spread Sheets	Data Base	Telecommunications	Marketing	Graphics	Desktop Publishing
Mainframe, Mini								
Workstations								
Microcomputers								
Dedicated W P								

6. Is the company planning significant equipment changes in the next 3 years?

☐ Yes ----> If Yes, please indicate the Estimated PERCENT changes planned in the list below.
☐ No
 What % of typewriters will be replaced with microcomputers? _____ %
 What % of the office desks (with or without typewriters) will microcomputers be added to? _____ %
 What % of microcomputers will be linked into a Local Network? _____ %
 What % of time-shared terminals will be converted to microcomputers? _____ %
 What % of microcomputers will be converted to time share, or mainframe or minisystems? _____ %
 Other. Please describe: _____ %

COMMERCIAL SOFTWARE USAGE In this section, we would like to know what types of commercial software are being used for applications.

7. Check the software used by the company for operating system. (Check all that apply.)

☐ PC DOS ☐ CPM ☐ Macintosh OS
☐ MS DOS ☐ Unix ☐ Other. Please specify: _____

8. Check the software used by the company for Word Processing on microcomputers:
(Check all that apply.)

☐ IBM Displaywrite ☐ WordStar Professional
☐ Microsoft Word ☐ WordStar Release 3 series
☐ MultiMate ☐ Quicksoft WordStar Release 4
☐ PC Write, ☐ WordStar 2000
☐ PFS Write ☐ WordPerfect
☐ Wang ☐ Other. Please specify: _____

9. Check the software used by the company for spread sheets. (Check all that apply.)

☐ Lotus 1A ☐ Quattro
☐ Lotus 2 Series ☐ SmartSheet
☐ Microsoft EXCEL ☐ Symphony
☐ Multiplan ☐ SuperCalc
☐ Other. Please specify: _____

10. Check the software used by the company for data base. (Check all that apply.)

☐ dBase II	☐ Fox Base	☐ Paradox
☐ dBase III	☐ Fourth Dimension	☐ R:base
☐ dBase III Plus	☐ Helix	☐ Reflex
☐ Data Flex	☐ Omnis	☐ Symphony
☐ Other. Please specify: _____		

11. Check the kinds of accounting applications using commercial software. To the right, please indicate the name of software used. (Check and write in all that apply.)

☐ General Ledger	Name of Purchased Software _____
☐ Payroll	Name of Purchased Software _____
☐ Inventory	Name of Purchased Software _____
☐ Accounts Receivable	Name of Purchased Software _____
☐ Accounts Payable	Name of Purchased Software _____
☐ Financial Analysis	Name of Purchased Software _____
☐ Other. Please describe: _____	

COMPUTER PROGRAMMING In this section, we would like to know what kinds of programming languages are being used in the office and the future of their usage.

12. Does the company employ Programmers?

☐ Yes ----- If Yes, check the types of programs these programmers write

☐	data base applications
☐	accounting
☐	System utilities
☐ Other. Please specify: _____	

☐ No ----- If No, check the following:

☐	Company has discontinued employment of programmers
☐	Never has hired programmers: always used consultants
☐	Never has needed to hire programmers: used commercial software

13. Does the company plan to continue actively using the programming language during the next three to five years? (Check and write years of those applicable.)

☐ BASIC	Don't use ☐	Continue ☐	Abandon ☐	in what year _____
☐ COBOL	Don't use ☐	Continue ☐	Abandon ☐	in what year _____
☐ PASCAL	Don't use ☐	Continue ☐	Abandon ☐	in what year _____
☐ C	Don't use ☐	Continue ☐	Abandon ☐	in what year _____
☐ Data Base Language	Don't use ☐	Continue ☐	Abandon ☐	in what year _____
☐ Other. Please specify: _____				

OFFICE SUPPORT EQUIPMENT In this section, we would like to know the configuration of desk equipment which would indicate the impact of computers on typewriter usage in the office.

14. Estimate the number of clerical, secretarial, and data/word processor desks which have

Est. Number _____	only a typewriter.
Est. Number _____	only a microcomputer with a printer.
Est. Number _____	only a computer terminal
Est. Number _____	a typewriter and a microcomputer with a printer.
Est. Number _____	a typewriter and a computer time sharing terminal
Est. Number _____	an electronic typewriter attached to a microcomputer.

15. Estimate the number of typewriters used in the company.

Est. Number _____	Electric Carriage typewriters
Est. Number _____	Selectrics (element electric and electronic)
Est. Number _____	Wheelwriters and other electronics
Est. Number _____	Other. Please specify: _____

16. During the past 5 years, what estimated percentage of the typewriters have been replaced by microcomputers or a dedicated word processing computer system?

☐ 0-10%	☐ 21-30%	☐ 41-50%
☐ 11-20%	☐ 31-40%	☐ Other. Please estimate % _____

The faculty and administration of Chabot College are trying to understand employers' needs. Would you also please provide the name and position of the most knowledgeable person to complete a second questionnaire on hiring needs and training needs for computer user personnel.

Name _____ Position _____

THANK YOU FOR YOUR ASSISTANCE AND COOPERATION.

Return to Carol Clough, Survey Project Director, Chabot College, Hayward, CA 94545 or
Chabot College - Valley Campus, Livermore, CA 94550

APPENDIX E
COVER LETTER FOR QUESTIONNAIRE

The faculty and administration of the Livermore and Hayward Campuses of Chabot College request your help with the enclosed South Alameda County Employer Questionnaire on Computer and Typewriter Usage. This survey has been made possible through a VEA Grant from the State of California.

The data collected from the completion of the enclosed questionnaire will not only be shared with the Lawrence Livermore National Laboratory but will also be included in the larger data structure of the survey results.

Please help us in two ways:

1. Forward the questionnaire to an appropriate person to complete the four major sections of the questionnaire: 1) Computer Equipment and Applications, 2) Commercial Software Usage, 3) Computer Programming, and 4) Office Support Equipment.
2. Mail the enclosed return letter after writing in the name of the person assigned to complete the survey and the name of the person in your area who deals with personnel matters. We plan to send the second person a follow-up survey relating to your present and future office skill needs.

We will appreciate your postmarking the return of the enclosed questionnaire by Friday, March 25, 1988. Your response is an essential part of our study to help orient instruction and curriculum planning toward local employer needs.

Sincerely


Dr. Richard Yeo
Acting Superintendent/President

ERIC Clearinghouse for
Junior Colleges

FEB 1 1990

Enclosures: Questionnaire and Return Reply Envelope
Return Reply Form and Envelope

Wang:1141R

